

Remarks

Status of the claims

Claims 3-21 are pending in the application. Claims 1 and 2 were cancelled previously. Claims 3,4,5 and 11 are amended for clarity. Support is found throughout the specification. Claims 6-10 are hereby cancelled without prejudice. New claim 21 is hereby added. Support is found in original claim 1, now cancelled, and throughout the specification.

No new matter has been added.

Summary of the Invention as Claimed

As currently amended, one aspect of the claimed invention is drawn to a fatty acid ester mixture of pentaerythritol, a pentaerythritol oligomer or mixtures thereof, wherein the fatty acid is a mixture containing from about 40-50% by weight of a C16 fatty acid and from about 45-55% by weight of a C18 fatty acid, and wherein the ester mixture contains less than 0.3% by weight of C17 fatty acid-containing component and has a melting point of at least 30°C (claim 3). The fatty acid mixture contains monoesters in about 10-25% by wt, diesters in about 25-40% by wt, and triesters in about 30-45% by wt (claim 4). An additional embodiment of the claimed invention is drawn to a fatty acid mixture containing monoesters in about 12-19% by wt, diesters in about 25-35% by wt, triesters in about 30-40% by wt, and tetraesters in about 6-11% by wt (claim 5).

Another embodiment of the invention as claimed is drawn to a cosmetic and/or pharmaceutical composition of the fatty acid ester mixture (claims 11-20).

Yet another embodiment of the claimed invention is drawn to a fatty acid ester mixture of pentaerythritol, wherein the fatty acid contains 6 to 22 carbon atoms, and wherein said ester mixture contains less than 0.3% by weight of C₁₇ fatty acid-containing component, and has a melting point of at least 30°C (claim 21).

Rejections under 35 U.S.C. § 103(a)

Claim 3, as previously presented, was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lindner (US 4,332,702) in view of Hurwitz, et al. (US 2,975,152; "Hurwitz").

Lindner discloses partial esters of pentaerythritol as internal lubricating agents for lowering the viscosity of polyvinyl chloride resins. The fatty acid portion of the partial pentaerythritol esters comprises 0-10% C14, 0-5% C15, 30-60% C16, 0-5% C17, and 30-60% C18. The partial esters are 25-45% monoester, 40-60% diester, and 15-30% triester, being substantially free of the tetraester.

The Examiner acknowledged that Lindner's esters do not have applicants' claimed melting point. Hurwitz was joined to overcome this deficiency.

Hurwitz discloses esters of pentaerythritol and oligomeric pentaerythritols having a melting point of not over 35° C, which are useful as plasticizers for vinyl chloride polymers. The described esters are fully esterified tetraesters as disclosed in column 11, lines 20-28:

"Regardless of the esterification method employed it is necessary that the esterification be substantially complete and therefore that the hydroxyl content of the ester be as low as possible. The hydroxyl number is generally below 15, and more often below 10 and close to about 5 depending on the reaction conditions and the amount of acid used for esterification. Preferably the hydroxyl content should be below 1 and even more desirably it should be as close as practical to zero."

This is in contrast to Lindner's esters, which are partial esters, "substantially free of tetraester" (Lindner, col 2, lines 25 and 49; Example 1, col 5, lines 58-59; claims 1 and 5). Since the esters of Lindner and Hurwitz are mutually exclusive structurally, their melting points cannot be related, and Hurwitz cannot be joined to Lindner to supply the melting point deficiency.

Further Lindner's utility is not in the cosmetic arts, instead being drawn to use as internal lubricants and HCl scavengers in polyvinyl chloride compositions. In addition, the disclosed utility of Hurwitz is as plasticizers for polyvinyl chloride resins, so that neither Lindner nor Hurwitz, nor their combination, would teach, motivate or suggest to

one skilled in the art that their respective compositions would have any reasonable probability of success as components of cosmetic or pharmaceutical compositions.

Claim 4, as previously presented, was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lindner in view of Hurwitz.

Lindner and Hurwitz are discussed above. Again, the difference between applicants' ester and that of Lindner is acknowledged by the Examiner to be the presently claimed melting point. The Examiner joined Hurwitz to cure this deficiency.

Again, the esters of Lindner are "substantially free of the tetraester", in contrast to Hurwitz' tetraesters. As such, the esters of Lindner and Hurwitz are mutually exclusive structurally, and their melting points cannot be related. Therefore Hurwitz cannot be joined to Lindner to supply the melting point deficiency.

Further Lindner's utility is not in the cosmetic arts, instead being drawn to use as internal lubricants and HCl scavengers in polyvinyl chloride compositions. In addition, the disclosed utility of Hurwitz is as plasticizers for polyvinyl chloride resins, so that neither Lindner nor Hurwitz, nor their combination, would teach, motivate or suggest to one skilled in the art that their respective compositions would have any reasonable probability of success as components of cosmetic or pharmaceutical compositions.

Claim 5, as previously presented, was rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakurai et al. (US 4,113,635, "Sakurai") in view of Hurwitz.

Sakurai discloses rust-proof lubricant compositions for coating metals, comprising mono-, di- and tri- partial esters of pentaerythritol and fatty acids having greater than 6 carbons. Example 3 discloses a fatty acid pentaerythritol ester mixture that is 20% monoester, 30% diester, 40% triester, and 10% tetraester, whereas applicants' claim 5 discloses about 12-19% monoester, about 25-35% diester, about 30-40% triester, and about 6-11% tetraester. The Examiner acknowledged that the difference between applicants' ester and that of Sakurai is the claimed melting point range, and joined Hurwitz to cure this deficiency.

The esters of Sakurai are primarily partial (mono-, di-, and tri-) esters, in contrast to Hurwitz' fully esterified tetraesters. In addition, Sakurai teaches that "mono-, di- and tri-substituted esters are more preferable than the esters produced by esterifying all of the four hydroxyl groups" (col. 3, lines 48-51), thereby teaching away from the tetraesters of Hurwitz. Thus, the esters of Sakurai and Hurwitz are mutually exclusive structurally so that their melting points cannot be related, and Sakurai teaches away from the tetraesters disclosed by Hurwitz. Therefore Hurwitz cannot be joined to Lindner to supply the melting point deficiency.

The Examiner stated that "a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties.... In this instance the percentage content of the mono-, di- and tri-esters of the prior art encompasses the fatty acid content of applicants' claimed mixture, with the percentage content of the monoester of the prior art being different by 1 percentage". Even though applicants do not necessarily agree with the Examiner's argument, we note that Sakurai's utility is not in the cosmetic arts, instead being drawn to use as rust-proof lubricant compositions for coating metals. In addition, the disclosed utility of Hurwitz is as plasticizers for polyvinyl chloride resins, so that neither Sakurai nor Hurwitz, nor their combination, would teach, motivate or suggest to one skilled in the art that their respective compositions would have any reasonable probability of success as components of cosmetic or pharmaceutical compositions.

Claims 6-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Konen et al. (Oil & Soap, 1945, 22, 57-60; "Konen"), in view of Barth et al. (US 2,441,555; "Barth"), in view of Cooper et al. (US 5,314,665; "Cooper") further in view of Barsky (US 2,705,722).

Even though applicants do not necessarily agree with the characterizations of the Examiner regarding the above-cited patents, in order to further prosecution, applicants hereby cancel claims 6-10 without prejudice.

Claims 11-20, as previously presented, were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hirose et al. (US 5,436,006; "Hirose"), in view of Bradley (US 1,951,593), in view of Hurwitz, in view of Sakurai, in view of Miranol Chemical Co., Inc. (EP 0163806; "Miranol") and further in view of Kahre et al. (US 6,432,419; "Kahre").

Hirose discloses a lanolin substitute, which is a synthetic oil produced by esterification of glycerol with a mixture of a branched C6-14 fatty acid, a linear C15-28 fatty acid and a C4-10 diacid, wherein (a) the molar ratio of branched to linear fatty acid is 1.7-2.3, (b) the molar ratio of diacid to glycerol is 0.7-0.8, and (c) the number of unreacted hydroxyl groups per glycerol unit is 0.4-0.6. Table 4 discloses a cream formulation containing polyoxyethylene sorbitan monostearate, not an oligoglucoside as stated by the Examiner.

The Examiner acknowledged that the difference between applicants' claimed cosmetic composition and Hirose is that Hirose does not disclose melting point, the ratio of mono-, di- and tri-esters in the ester mixture, and the presence of an oligoglycoside. The Examiner failed to note that a key difference is that the partial esters of Hirose are specifically glycerol esters (col 2, line 20; claim 1), whereas the partial esters of applicants are specifically pentaerythritol esters. Indeed, Hirose makes reference to mixed esters of pentaerythritol with coconut fatty acid (col 1, lines 26-50), but the products were described as "inferior". Thus Hirose actually teaches away from pentaerythritol partial esters.

In order to overcome the melting point deficiency of Hirose, the Examiner joined Hurwitz, which discloses pentaerythritol tetraesters having melting points of not over 35° C. As discussed above, the tetraesters of Hurwitz are structurally different from the esters of Hirose in that the Hurwitz esters are pentaerythritol esters, versus glycerol esters (Hirose). In addition, the Hurwitz esters are fully esterified tetraesters, as discussed above, while the Hirose esters are partial esters. Thus the compounds are structurally distinct, and the melting points cannot be related. In addition, Hurwitz is unrelated to the cosmetic arts, but rather discloses compounds of use as plasticizers for polyvinyl chloride resins. Finally, as discussed above, Hirose teaches away from pentaerythritol partial esters.

The Examiner also joined Sakurai, which discloses a mixture of pentaerythritol partial esters useful as rust-proof lubricants, not cosmetics. Again, the structural difference with the glycerol partial esters of Hirose precludes comparison of the melting points. In addition, Sakurai is unrelated to the cosmetic arts, but rather discloses compounds of use as rust-proof lubricant compositions for coating metals. Finally, as discussed above, Hirose teaches away from pentaerythritol partial esters.

The Examiner joined Bradley to teach the equivalence of pentaerythritol and glycerol esters. Bradley discloses various mixed esters of fatty alcohols, diacids and glycerol, useful as plasticizers for nitrocellulose, waterproofing agents, leather dressings, impregnating agents, textile softeners and shoe polishes. No cosmetic utility is disclosed or implied. Describing the preparation of the mixed esters, Bradley states that one "...may use in place of glycerol the other commonly employed polyhydroxy alcohols, such as the glycols and polyglycols, polyglycerols, pentaerythritol, ...etc." Thus, Bradley teaches that for synthesis purposes, one may substitute pentaerythritol for glycerol, however the utility of such pentaerythritol-containing products is unrelated by Bradley to the cosmetic arts.

The Examiner also joined Miranol. Miranol discloses a mixture of partially esterified pentaerythritol oligomers with C6-18 fatty acids, useful as moisturizers and emollients in cosmetics. We note that all of the examples cited by the Examiner (Examples 8-12) use tripentaerythritol tetra-laurate/myristate or mixtures of oligomeric pentaerythritol tetra-laurate/myristate, having specific ratios of C12: C14. In terms of sensory (cosmetic) evaluation, the examples teach (1) the superiority of the oligomeric mixture over the pure trimer, and (2) the superiority of the C12:C14 ratio being greater than 1:1 (Example 12). There is no teaching or indication in Miranol regarding the relative ratios of C16, C17 and C18, which is key to applicants' invention. Note that the preferred fatty acid carbon range of Miranol is 12-16 (page 5, lines 7-11), thereby lacking the C18-component.

Finally, the Examiner also joined Kahre in order to cure the deficiency in Hirose regarding the oligoglycoside component. Kahre discloses a cosmetic and/or pharmaceutical composition free of silicone, containing a fatty compound comprising an

oil selected from the group consisting of (a) dialkyl ethers, (b) dialkyl cyclohexanes, (c) Guerbet alcohols, (d) polyol polyhydroxystearates, wherein the polyol may comprise pentaerythritol and dipentaerythritol, and (e) hydroxycarboxylic acid esters. The sensorial properties are improved by mixing with nonionic surfactants, preferably alkyl/alkenyl oligoglycosides. Component (d) comprising (di)pentaerythritol esters of polyhydroxystearic acid is outside the scope of applicants' presently claimed esters. Also, as noted above, Hirose contains no reference to oligoglycosides, Table 4 listing a sorbitan derivative. For these reasons, joining Kahre to Hirose is improper.

Thus, taken *in toto*, the combination of Hirose, Bradley, Hurwitz, Sakurai, Miranol and Kahre would fail to lead one skilled in the art at the time of the invention, to applicants' invention, without the benefit of applicants' present disclosure. This is impermissible hindsight reconstruction.

Conclusion

In summary, in view of the above claim amendments and remarks, applicants believe that the pending claims as amended are in condition for allowance. The Examiner is respectfully requested to reconsider, withdraw the rejections and allow the claims.

If any additional fees are required in support of this application, authorization is granted to charge our Deposit Account No. 50-1943.

Respectfully submitted,

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